Operating Instructions

VEGADIS 11

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1 About this document

1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

1.2 Target group

This operating instructions manual is directed to trained specialist personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbols used

Information, tip, note
This symbol indicates helpful additional information.

Caution: If this warning is ignored, faults or malfunctions can result.

Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.

Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.

Ex applications
This symbol indicates special instructions for Ex applications.

SIL applications
This symbol indicates instructions for functional safety which must be taken into account particularly for safety-relevant applications.

- **List**
  The dot set in front indicates a list with no implied sequence.

→ **Action**
This arrow indicates a single action.

1 **Sequence of actions**
Numbers set in front indicate successive steps in a procedure.

Battery disposal
This symbol indicates special information about the disposal of batteries and accumulators.

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2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

During work on and with the device the required personal protective equipment must always be worn.

2.2 Appropriate use

VEGADIS 11 is a digital indicating instrument for 4 … 20 mA circuits.

2.3 Warning about incorrect use

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

2.4 General safety instructions

This is a state-of-the-art instrument complying with all prevailing regulations and guidelines. The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for the trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

The safety instructions in this operating instructions manual, the national installation standards as well as the valid safety regulations and accident prevention rules must be observed by the user.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

The safety approval markings and safety tips on the device must also be observed.

2.5 Safety label on the instrument

The safety approval markings and safety tips on the device must be observed.

2.6 CE conformity

The instrument is CE conform to EMVG (89/336/EWG), NSR (73/23/EWG) and corresponds to NAMUR recommendation NE 21.

Conformity has been judged according to the following standards:

- EMC:
  - Emission EN 50081-1
  - Susceptibility EN 50082-2

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- LVD: EN 61010-1

2.7 Safety instructions for Ex areas

Please note the Ex-specific safety information for installation and operation in Ex areas. These safety instructions are part of the operating instructions manual and come with the Ex-approved instruments.

2.8 Environmental instructions

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Please help us fulfill this obligation by observing the environmental instructions in this manual:

- Chapter "*Packaging, transport and storage*"
- Chapter "*Disposal*"

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- Digital indicating instrument VEGADIS 11
- Documentation
  - this operating instructions manual
  - Ex specific safety instructions (with Ex versions), if necessary further certificates

Constituent parts

The VEGADIS 11 consists of the components:

- Housing with integrated adjustment insert
- Housing cover with integrated indicating module

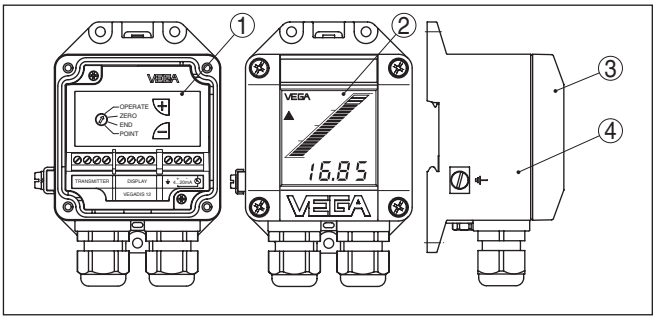

Fig. 1: VEGADIS 11

1 Adjustment insert
2 Indication
3 Cover
4 Housing

3.2 Principle of operation

Area of application

VEGADIS 11 is a digital indicating instrument for measured value indication in 4 … 20 mA circuits. The measured value is displayed digitally or as bargraph via the LC display. The digital indication can be scaled. VEGADIS 11 is suitable for wall and carrier rail mounting.

Voltage supply

VEGADIS 11 is looped directly into the 4 … 20 mA circuits and requires no separate external energy. Connection is carried out via screw terminals in the housing.

3.3 Operation

For scaling the indication, VEGADIS 11 is equipped with an adjustment module. Adjustment is carried out via a rotary switch and two keys.

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3.4 Packaging, transport and storage

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test based on ISO 4180.

The packaging of standard instruments consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.

Transport

Transport must be carried out in due consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.

Transport inspection

The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.

Storage

Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.

Unless otherwise indicated, the packages must be stored only under the following conditions:

- Not in the open
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration

Storage and transport temperature

- Storage and transport temperature see chapter "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 … 85 %

4 Mounting

4.1 General instructions

Installation position

VEGADIS 11 can be mounted in any position. However, vertical mounting is recommended. By doing so, penetration of moisture can be avoided.

Moisture

Use the recommended cables (see chapter "*Connecting to power supply*") and tighten the cable gland.

4.2 Mounting instructions

Mounting versions

VEGADIS 11 can be mounted as follows:

- on carrier rail 35 x 7.5 according to EN 50022
- on mounting plate or on the wall

5 Connecting to power supply

5.1 Preparing the connection

Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

Take note of safety instructions for Ex applications

In hazardous areas you must take note of the respective regulations, conformity and type approval certificates of the sensors and power supply units.

Select connection cable

The instrument is connected with standard two-wire cable without screen. If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used.

Use cable with round cross-section. A cable outer diameter of 5 … 9 mm (0.2 … 0.35 in) ensures the seal effect of the cable gland. If you are using cable with a different diameter or cross-section, exchange the seal or use a suitable cable gland.

Select connection cable for Ex applications

Take note of the corresponding installation regulations for Ex applications.

Cable screening and grounding

If screened cable is required, connect the cable screen on both ends to ground potential. In the VEGADIS 11, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the potential equalisation (low impedance).

If potential equalisation currents are expected, the connection on the processing side must be made via a ceramic capacitor (e. g. 1 nF, 1500 V). The low-frequency potential equalisation currents are thus suppressed, but the protective effect against high frequency interference signals remains.

Cable screen and grounding for Ex applications

In Ex applications, one-sided grounding on the sensor is recommended, see EN 60079-14.

5.2 Connection procedure

Proceed as follows:

1. Unscrew the housing cover
2. Loosen compression nut of the cable entry gland
3. Remove approx. 10 cm of the cable mantle, strip approx. 1 cm insulation from the individual wires
4. Insert the cable into VEGADIS 11 through the cable entry
5. Loosen the screwed terminals with a screwdriver
6. Insert the wire ends into the open terminals according to the wiring plan
7. Tighten screw terminals again
8. Check the hold of the wires in the terminals by lightly pulling on them

9. Connect the screen to the ground terminal
10. Connect the ground terminal outside on the housing according to specification (low impedance)
11. Tighten the compression nut of the cable entry gland. The seal ring must completely encircle the cable
12. Screw the housing cover back on

The electrical connection is finished.

5.3 Wiring plan

Passive sensors

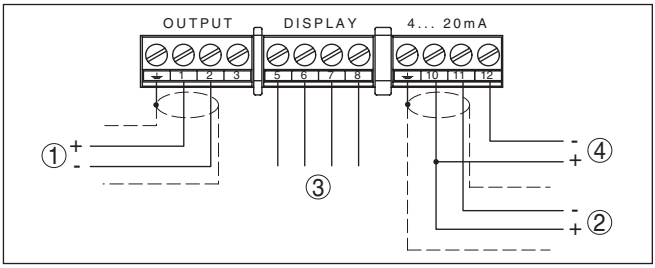

Fig. 2: Wiring plan - passive sensor

1 To the sensor
2 For voltage supply or to the processing system (active input)
3 for indication
4 Control instrument (4 … 20 mA measurement)

Active sensors, sensors with signal conditioning instrument

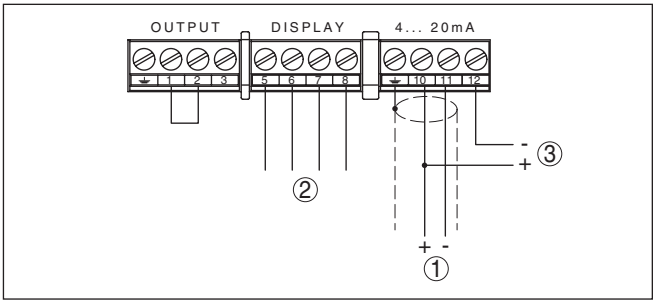

Fig. 3: Wiring plan - active sensor

1 To the sensor or to the signal conditioning instrument
2 for indication
3 To the processing system (passive input)

6 Setup

6.1 Adjustment system

Adjustment elements

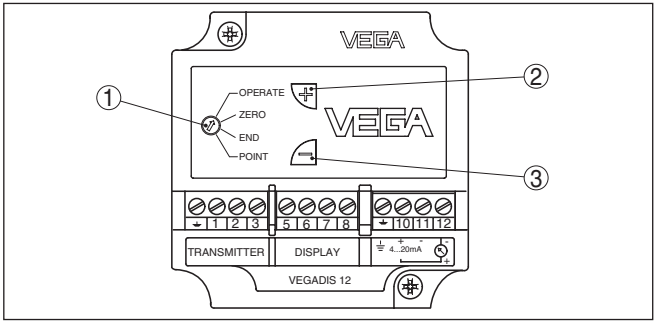

Fig. 4: Adjustment elements of VEGADIS 11

1 Rotary switch: choose the requested function
*2 **[+]** key, change value (rising)*
*3 **[-]** key, change value (falling)*

Adjustment volume

- operate - operation
- zero - adjustment of the min. value (4 mA)
- span - adjustment of the max. value (20 mA)
- point - shifting of the decimal point

Adjustment system

- The desired function is selected with the rotary switch
- With the ***[+]*** and ***[-]*** keys the signal current or the integration time is set or the indication is scaled
- The respective rotary switch is finally set to position "*OPERATE*"

The set values are transmitted to the EEPROM memory and remain there even in case of voltage loss.

6.2 Indication scaling

Preparation

For scaling the indication, it is recommended to screw the housing cover laterally or displaced to the bottom on the housing.

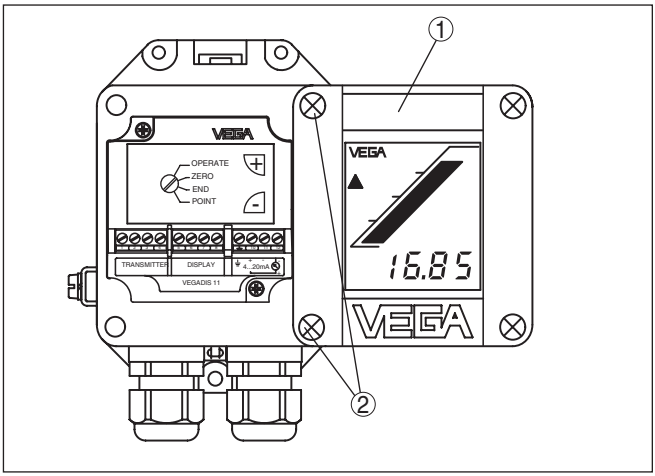

Fig. 5: With an individual instrument

1 Indicating module
2 Fixing screws

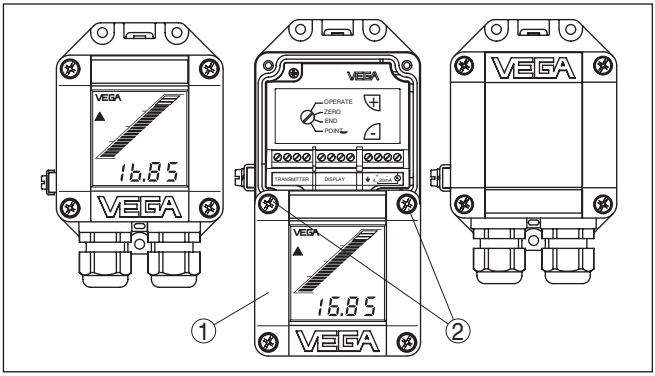

Fig. 6: With several instruments mounted next to each other

1 Indicating module
2 Fixing screws

Display elements

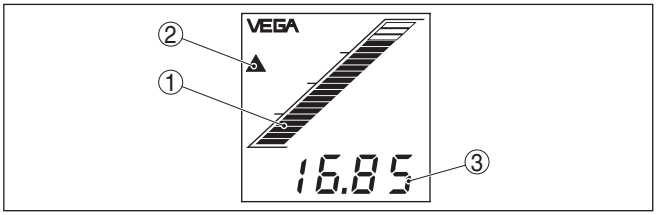

Fig. 7: Indicating elements of VEGADIS 11

1 Bar graph
2 Tendency indication
3 Digital value

- four positions as well as signa and decimal point
- individual scaling between -9999 … +9999

The display outputs the current 4 … 20 mA as bar graph and digital value.

With 4 mA no segment of the bar graph appears, with 20 mA all segments appear. This assignment is fix.

You can scale the digital value to any value between -9999 … +9999 via the adjustment module.

Adjustment steps, scaling

To scale the indication, proceed as follows:

1. Initial value: Set rotary switch to "*zero*"
2. Set the requested value, e.g. 0 with the ***[+]*** and ***[-]*** keys
3. Final value: Set the rotary switch to "*span*"
4. Set the requested value, e.g. 1000 with the ***[+]*** and ***[-]*** keys
5. Decimal point: Set the rotary switch to "*point*"
6. With the ***[+]*** and ***[-]*** keys you can adjust the requested value, e.g. 8888 (no decimal point)
7. Set rotary switch to "*OPERATE*"
8. Screw the housing cover back on

The adjustment data are effective, the output current 4 … 20 mA corresponds to the actual level.

7 Maintenance and fault rectification

7.1 Maintenance

If the instrument is used properly, no special maintenance is required in normal operation.

7.2 Rectify faults

Reaction when malfunctions occur

The operator of the system is responsible for taking suitable measures to rectify faults.

Causes of malfunction

VEGADIS 11 offers maximum reliability. Nevertheless, faults can occur during operation. These may be caused by the following, e.g.:

- Sensor
- Process
- Voltage supply
- Signal processing

24 hour service hotline

Should these measures not be successful, please call in urgent cases the VEGA service hotline under the phone no. **+49 1805 858550**.

The hotline is manned 7 days a week round-the-clock. Since we offer this service worldwide, the support is only available in the English language. The service is free, only standard call charges are incurred.

Check the 4 … 20 mA signal

Connect a multimeter in the suitable measuring range according to the wiring plan.

Error code	Cause	Rectification
4 … 20 mA signal not stable	Level fluctuations	– Adjust integration time via PACTware
	No atmospheric pressure compensation with pressure transmitters	– Check pressure compensation
4 … 20 mA signal missing	Wrong connection to voltage supply	– Check connection according to chapter "*Connection steps*" and if necessary, correct according to chapter "*Wiring plan*"
	No power supply	– Check cables for breaks; repair if necessary
	Operating voltage too low or load resistance too high	– Check, adapt if necessary
Current signal 3.6 mA; 22 mA	Electronics module in the sensor defective	– Exchange the instrument or send it in for repair

In Ex applications, the regulations for the wiring of intrinsically safe circuits must be observed.

Reaction after fault rectification

Depending on the reason for the fault and the measures taken, the steps described in chapter "*Set up*" may have to be carried out again.

7.3 How to proceed if a repair is needed

You can find a repair form as well as detailed information on how to proceed at www.vega.com/downloads and "*Forms and certificates*".

By doing this you help us carry out the repair quickly and without having to call back for needed information.

If a repair is necessary, please proceed as follows:

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the completed form and, if need be, also a safety data sheet outside on the packaging
- Please contact the agency serving you to get the address for the return shipment. You can find the agency on our home page www.vega.com.

8 Dismount

8.1 Dismounting steps

Warning:
Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel or pipeline, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the parts to be easily separable.

WEEE directive 2002/96/EG
This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws. Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

Correct disposal avoids negative effects on humans and the environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

9 Supplement

9.1 Technical data

General data	
316L corresponds to 1.4404 or 1.4435, 316Ti corresponds to 1.4571	
Materials	
– Housing	plastic PBT
– Ground terminal	316Ti/316L
– Inspection window of the indication	
Weight	approx. 0.5 kg (1.102 lbs)

Ambient conditions	
Ambient temperature	-20 … +70 °C (-40 … +158 °F)
Storage and transport temperature	-40 … +85 °C (-40 … +185 °F)

Electromechanical data	
Cable gland	2 x cable entry M20 x 1.5 (cable: ø 5 … 9 mm)
Screw terminals for cable cross-section up to	2.5 mm^2 (AWG 14)

Adjustment and display elements	
Adjustment elements	2 keys, 1 rotary switch
Indication	LC multiple function display with bar graph, digital value 4-digit and tendency indicator for rising or falling values
Measured value indication	
– Number of figures - digital value	4
– Size of digits	W x H = 5.5 x 10 mm
– Number of segments - bar graph	20

Voltage supply	
Voltage supply	via the signal circuit
Max. input current	150 mA
Voltage loss with 20 mA	approx. 4.5 V
Current range	3.5 … 22.5 mA[1)]

Electrical protective measures	
Protection rating	IP 66
Overvoltage category	III
Protection class	III

Approvals[2)]	
ATEX ia	ATEX II 2G EEx ia IIC T6

[1)] The indication remains dark if the loop current is not sufficient for operation.

[2)] Deviating data in Ex applications: see separate safety instructions.

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9.2 Dimensions

VEGADIS 11

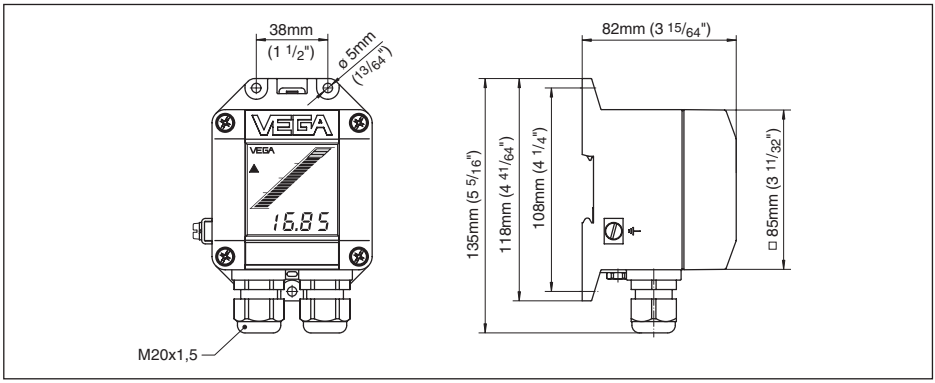

Fig. 8: VEGADIS 11, size of digits W x H = approx. 5 x 9 mm

9.3 Industrial property rights

VEGA product lines are global protected by industrial property rights. Further information see www.vega.com.

Only in U.S.A.: Further information see patent label at the sensor housing.

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9.4 Trademark

All the brands as well as trade and company names used are property of their lawful proprietor/ originator.

Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
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